

We claim:

1. A cooling structure for a disk storage device accommodating at least one disk drive, comprising:

the disk storage device having a connection board to which the disk drive is electrically connected, such that data input/output to/from the disk drive is performed via a signal line formed on the connection board;

a heat-absorbing part provided on the disk drive;

a heat-dissipating part provided so as to be exposed outside the disk storage device; and

a heat-transferring part for connecting the heat-absorbing part and the heat-dissipating part;

wherein heat generated by the disk drive is transmitted from the heat-absorbing part via the heat-transferring part to the heat-dissipating part to radiate the heat, whereby an opening for air cooling is substantially eliminated from the connection board.

2. The cooling structure for a disk storage device according to claim 1, wherein:

the disk storage device accommodates a plurality of the disk drives; and

substantially no clearance for air cooling exists between the disk drives and between the disk drives and a housing of the disk storage device.

3. The cooling structure for a disk storage device according to claim 1, wherein the heat-transferring part separably comprises a heat-absorbing-side heat-transferring part coupled to the heat-absorbing part and provided at the disk drive side, and a heat-dissipating-side heat-transferring part coupled to the heat-dissipating part and provided at the connection board side.

4. The cooling structure for a disk storage device according to claim 3, wherein the heat-absorbing-side heat-transferring part and the heat-dissipating-side heat-transferring part are in surface contact with each other at a plurality of locations to transfer heat.

5. The cooling structure for a disk storage device according to claim 1, wherein the heat-absorbing part is distributedly disposed corresponding to heat producing areas of the disk drive.

6. The cooling structure for a disk storage device according to claim 1, wherein the heat-absorbing part is provided so as to cover a surface of the disk drive.

7. The cooling structure for a disk storage device according to claim 1, wherein the heat-absorbing part includes a heat

pipe.

8. The cooling structure for a disk storage device according to claim 1, further comprising a cooling mechanism for removing heat radiated from the heat-dissipating part.

9. The cooling structure for a disk storage device according to claim 8, wherein the cooling mechanism removes heat from the heat-dissipating part by air cooling.

10. The cooling structure for a disk storage device according to claim 8, wherein the cooling mechanism removes heat from the heat-dissipating part by liquid cooling.

11. The cooling structure for a disk storage device according to claim 1, wherein:

a control board for controlling operation of the disk drive is provided in the disk storage device, the control board being connected to the connection board;

a signal line for connecting the control board and the disk drive is formed on the connection board; and

the signal line is formed so as to substantially linearly connect an electrical connector unit between the disk drive and the connection board, with an electrical connector unit between the control board and the connection board.

12. The cooling structure for a disk storage device according to claim 1, wherein:

a plurality of compartments are formed vertically within a housing of the disk storage device; and

in each of the compartments, a plurality of the disk drives are disposed substantially in close contact with each other.

13. A disk array apparatus comprising:

a plurality of disk storage devices for connecting a plurality of disk drives to a connection board having a signal line for electrically connecting the disk drives with each other, and for accommodating the disk drives substantially in close contact with each other;

a device housing for accommodating the disk storage devices;

a cooling mechanism provided in the device housing;

heat-absorbing parts respectively provided for the disk drives;

at least one heat-dissipating part provided so as to be exposed outside of the disk storage devices; and

a heat-transferring part for connecting the heat-absorbing parts and the heat-dissipating part with each other;

wherein heat generated by the disk drives is transmitted

from the heat-absorbing parts via the heat-transferring part to the heat-dissipating part and is radiated from the heat-dissipating part via the cooling mechanism, whereby substantially no opening for air cooling is formed in the connection board.

14. A cooling structure for a unit-accommodating enclosure accommodating at least one unit having a heat producing area inside, comprising:

- the unit connected to a connection board on which an information transmission path is formed such that information input/output to/from the unit is performed via the information transmission path;

- a heat-absorbing part provided on the unit;

- a heat-dissipating part provided so as to be exposed outside the unit-accommodating enclosure; and

- a heat-transferring part for connecting the heat-absorbing part and the heat-dissipating part;

wherein heat generated by the unit is transmitted from the heat-absorbing part via the heat-transferring part to the heat-dissipating part and is radiated therefrom, whereby an opening for air cooling is substantially eliminated from the connection board.